64TH CONGRESS, 1st Session. } HOUSE OF REPRESENTATIVES. { DOCUMENT No. 559.

SOUTH FORK OF EDISTO RIVER UP TO SPRINGFIELD, S. C.

LETTER

FROM

THE SECRETARY OF WAR,

TRANSMITTING,

WITH A LETTER FROM THE CHIEF OF ENGINEERS, REPORTS ON PRELIMINARY EXAMINATION AND PLAN AND ESTIMATE OF COST OF IMPROVEMENT OF SOUTH FORK OF EDISTO RIVER, S. C., TO A POINT OPPOSITE THE CITY OF SPRINGFIELD.

JANUARY 13, 1916.—Referred to the Committee on Rivers and Harbors and ordered to be printed, with illustration.

WAR DEPARTMENT,
Washington, January 12, 1916.

THE SPEAKER OF THE HOUSE OF REPRESENTATIVES.

SIR: I have the honor to transmit herewith a letter from the Chief of Engineers, United States Army, dated 10th instant, together with copies of reports from Maj. G. A. Youngberg, Corps of Engineers, dated June 1, 1915, and October 20, 1915, with map on preliminary examination and plan and estimate of cost of improvement, respectively, of South Fork of Edisto River, S. C., made by him in compliance with the provisions of the river and harbor act approved March 4, 1915.

Very respectfully,

LINDLEY M. GARRISON,
Secretary of War.

WAR DEPARTMENT,
OFFICE OF THE CHIEF OF ENGINEERS,
Washington, January 10, 1916.

From: The Chief of Engineers, United States Army.
To: The Secretary of War.
Subject: Preliminary examination and plan and estimate of cost of improvement of South Fork of Edisto River, S. C.

1. There are submitted herewith for transmission to Congress reports dated June 1, 1915, and October 20, 1915, with map, by Maj. G. A. Youngberg, Corps of Engineers, on preliminary examination,

and plan and estimate of cost of improvement, respectively, authorized by the river and harbor act approved March 4, 1915, of South Fork of Edisto River, S. C., to a point opposite the city of Springfield.

2. The South Fork of the Edisto unites with the North Fork at a point about 117 miles above the mouth of the Edisto River which enters the ocean about 32 miles southwest of Charleston. Between 1882 and 1895 the Edisto was improved from its mouth to Guignard's Landing, opposite Springfield, on the South Fork. The improvement contemplated was completed, but failed to develop a steamboat traffic on the river, and maintenance was discontinued after the improvement had facilitated the rafting of all available timber of value. The improvement of the Edisto River up to Orangeburg on the North Fork has been recommended in a report now before Congress, printed in House Document No. 606, Sixty-third Congress, second session, and the improvement now desired by interested parties is the snagging of the South Fork up to Bamberg in connection with the proposed work of similar character on the main river and North Fork. The district officer estimates that to include the South Fork in this work will require an additional expenditure amounting to $5,000, and he recommends that this amount be added to the estimate. The division engineer is of opinion that the South Fork of the Edisto River is not worthy of improvement by the General Government at the present time.

3. These reports have been referred, as required by law, to the Board of Engineers for Rivers and Harbors, and attention is invited to its report herewith, dated November 23, 1915, in which it expresses the opinion that the work recommended on the main river and North Fork is experimental in character and should not be extended unless justified by resulting commercial developments.

4. After due consideration of the above-mentioned reports, I concur in the views of the division engineer and the Board of Engineers for Rivers and Harbors, and therefore report that the improvement by the United States of South Fork of Edisto River, S. C., to a point opposite the city of Springfield, is not deemed advisable at the present time.

DAN C. KINGMAN,
Chief of Engineers, United States Army.

REPORT OF THE BOARD OF ENGINEERS FOR RIVERS AND HARBORS ON PLAN AND ESTIMATE OF COST OF IMPROVEMENT.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
November 23, 1915.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. The following is in review of the district officer's reports authorized by the river and harbor act of March 4, 1915, on preliminary examination and survey of "South Fork of Edisto River, South Carolina, to a point opposite the city of Springfield."

2. The South Fork of the Edisto unites with the North Fork at a point 117 miles from the sea, into which the Edisto empties. The

South Fork was improved in connection with work on the main stream and the North Fork during the period 1882–1895, at a total cost of about $33,000. It was reported in 1896 that the improvement had been successful in facilitating the transportation of all available timber and that nothing else of value was left for water transportation. No further work was done.

3. The present examination extended from Guignards Landing, opposite Springfield, to the mouth of the South Fork, a distance by water of about 98 miles, but only about 30 miles in an air line. The stream is very crooked, narrow, and much obstructed by logs, snags, etc. The reach from Bamberg to the mouth, 32 miles, is somewhat better than the reach above, but only small boats could navigate it on account of the sharp bends, even if the obstructions were removed. Much of the adjacent country is timbered swamp lands. Back from the river the country is extensively farmed, the principal crop being cotton. The territory adjacent is served by three railroads.

4. Except for the rafting of a few logs there is no commerce on the South Fork at the present time and but little on the main stream, over which any commerce from the South Fork would have to seek an outlet.

5. The improvement desired is from the mouth to Bamberg, in connection with work of snagging that has been recommended but not yet authorized by Congress on the main stream and on the North Fork up to Orangeburg. The district officer is of opinion that the locality is not worthy of improvement at the present time and that action should be deferred until such time as improvement of the main stream shall have been effected and a self-sustaining boat service shall have been established. The division engineer concurs in this view.

6. Interested parties were informed of the unfavorable report of the district officer and given an opportunity of presenting their views to the board. This resulted in a hearing at this office on September 28, 1915, at which Hon. J. F. Byrnes, Member of Congress, appeared. He advocated improvement up to Bamberg, and as a result of his presentation an estimate was secured from the district officer for snagging on this portion of the South Fork. It amounts to $5,000.

7. Bamberg is a smaller place than Orangeburg and is 3 miles from the river. The commercial interests along the main stream and the North Fork to Orangeburg seemed to the board sufficient to warrant the experiment of doing work of snagging on them as recommended in House Document No. 606, Sixty-third Congress, second session, so that local interests could carry out their plan of putting in service a boat line to Orangeburg. The success of this attempt is not assured, however, even though the improvement is undertaken, and it would seem to be the part of wisdom to await developments before undertaking any extensions of that work.

8. In view of the foregoing, the board concurs with the division engineer in the opinion that at this time it is not advisable for the United States to undertake the improvement of the South Fork of the Edisto River, S. C.

9. In compliance with law, the board reports that there are no questions of terminal facilities, water power, or other related subjects having any material bearing upon the improvement of navigation at this locality.

For the board:

JOHN BIDDLE,
Colonel, Corps of Engineers,
Senior Member Present.

PRELIMINARY EXAMINATION OF SOUTH FORK OF EDISTO RIVER UP TO SPRINGFIELD, S. C.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Charleston, S. C., June 1, 1915.

From: The District Engineer Officer.
To: The Chief of Engineers, United States Army.
(Through the Division Engineer).
Subject: Preliminary examination of the South Fork of Edisto River, S. C., to a point opposite the city of Springfield.

1. In compliance with department letter of March 15, 1915, report is submitted as follows on the preliminary examination of South Fork of Edisto River, S. C., to a point opposite the city of Springfield.

2. The Edisto River system in its upper courses consists of a number of small streams originating in the Sand Hill Region between Columbia, S. C., and Augusta, Ga., which unite and drain a portion of the southeastern section of South Carolina. The general course of the river is southeast and south, and parallels the Santee River on the one hand and the Savannah River on the other. It flows into the Atlantic near the mouth of St. Helena Sound, 32 miles in an air line from Charleston and 54 miles from Savannah, with both of which seaports it is connected by means of the inland waterway, as well as the open sea. At its mouth the river is known as the South Edisto to distinguish it from a tidal estuary called the North Edisto with which it is connected. This portion, with its inland waterway connections, is shown on United States Coast and Geodetic Survey Chart No. 154.

3. The principal tributaries are designated the North and South Forks. Of these, the South Fork is the larger. It is formed by the confluence of many small tributaries in Aiken County, S. C., and flows southeasterly across the county line not far from Springfield and thence marks the boundary between Orangeburg, Barnwell, and Bamberg Counties to the point of junction with the North Fork, which, according to recent surveys, is 117 miles by river from the sea. This junction is about 6 miles west of Branchville on the Southern Railway line connecting Charleston and Augusta.

4. History of previous examinations and improvements and the results thereof are reviewed as follows:

(*a*) Annual Report Chief of Engineers for 1881, Appendix J 15, pp. 1138–1140; a general examination in 1880 of the Edisto River system. The report recommended improvement of the main river and the South Fork for the accommodation of light-draft steamboats from the sea to the junction of the forks and thence for rafts

and flatboats up the South Fork to Guignard's Landing, opposite Springfield, a total distance of 260 miles, as reported. The estimated cost was $33,385, and the project comprised improvement of new channels and cut-offs then in process of formation, cutting across necks of bends, closing lateral channels, snagging, and dredging.

Under this project work was begun in 1882 and completed in 1895. During this period the full amount of the estimate was appropriated and expended on the improvement of the main river and South Fork up to Guignard's Landing excepting only a small balance of $282.35 redeposited to the credit of the Treasurer of the United States June 24, 1896, and the sum of $2,500 which was spent on the North Fork in compliance with the river and harbor act of September 19, 1890.

In the Annual Report for 1896 the district officer reported to the effect that no further work would be done, that the improvement had been successful and had accomplished its purpose in facilitating the transportation of all available timber of value, and that nothing else of value was left for transportation by water. Further maintenance was not recommended. It is reported that no steamboat or flatboat navigation was developed by the improvement, and that during the progress of the work it became evident that the lumber industry was the only interest warranting improvement of the stream. This failure to develop a steamboat freight service occurred in spite of the fact that the railroad service was more or less inadequate and expensive as compared with conditions that now obtain.

The district officer in his report for 1896 had reference to yellow-pine lumber, which at that time was the only variety having a market value. In due course the diminishing supply of this variety so increased prices as to create a profitable demand for other varieties growing along the river, such as shortleaf pine, cypress, and gum, and led to a second examination and report.

(*b*) House Document No. 173, Fifty-eighth Congress, second session: An examination in 1902 of the main river and South Fork up to the county line between Aiken and Edgefield Counties, estimated at 305 miles from the sea. As a result of this examination it was estimated that there were about 400,000,000 feet board measure of marketable timber within 6 miles of the river. Cutting was then in active progress. There was no prospect of developing any steamboat navigation on the river. The district officer recommended as follows:

> If it is the policy of the Government to continue the improvement of streams for rafting purposes alone, this river is considered worthy of improvement to the extent of removing the worst obstructions. A survey would cost about $1,500. It is not considered necessary, as an estimate can be made from available data.

This recommendation was concurred in by the division engineer. The Board of Engineers for Rivers and Harbors thereupon arranged for a public hearing at Charleston, but interested parties failed to appear in support of the proposed improvement. The conclusions of the board, concurred in by the Chief of Engineers, are quoted as follows:

> Having in mind that to facilitate the removal of the remaining timber upon the upper Edisto is a matter of at least doubtful public policy; that no improvement of this stream at reasonable cost would be of a permanent nature; that no general navigation is expected to result from any improvements proposed; that the greater portion of the good timber has probably already been removed; and that the lower portion of

the river is still useful for logging purposes, the board is of opinion that it is not advisable for the United States to undertake the further improvement of this river.

(*c*) House Document No. 516, Sixtieth Congress, first session: An examination in 1907 of the South Fork from its mouth to Scotts Bridge, Aiken County, estimated about 290 miles from the sea. In connection with this examination, which included the main river also, it was estimated that there was on the river 1,000,000,000 board feet of marketable pine, cypress, and hardwood timber, a considerable part of which was on the South Fork. Its value was placed at $2,000,000 as a conservative estimate.

The district officer deemed the "river worthy of improvement to the extent of making it a good rafting river," and recommended an allotment of $250 for a thorough examination "to determine the character and number of obstructions, to decide what sucks should be opened and what should be closed, and to estimate the cost.' This recommendation as to an allotment for survey was concurred in by the division engineer. The Board of Engineers expressed itself as follows:

> Aside from the fact that a slightly larger prospective output of lumber is now estimated than at the time of the former examination, no change in conditions affecting the advisability of the improvement is apparent to the board. The probability of the growth of a general commerce as a result of providing facilities for the rafting of lumber is, in the opinion of the board, too remote to be considered a factor in the question of undertaking the improvement now proposed. While the improvement would facilitate the shipment of timber from the river, the board believes that the benefits thus gained would not be commensurate with the probable cost of the work.
>
> After careful consideration, the board is unable to concur with the district officer and the division engineer as to the advisability of making a survey with a view to the improvement of the South Fork of Edisto River, and for the reasons stated it is of the opinion that the proposed improvement is not worthy of being undertaken by the United States.

The opinion of the Chief of Engineers was as follows:

> The Chief of Engineers is constrained to adopt the views of the Board of Engineers for Rivers and Harbors that the South Fork, Edisto River, does not at this time promise benefits to its navigation interests commensurate with the cost of securing them, and must, under the requirements of the law, hold that the locality is not worthy of improvement by the United States. The work most urgently needed is snagging, and the thought is suggested that a number of streams of this character, each not worthy of improvement when considered alone, may at a later date, when a more adequate equipment of snag boats is available, be improved at a justifiable cost by the temporary services of a boat, the cost and upkeep of which is shared by several localities.
>
> I therefore recommend that no further examination be ordered at this time, and that this report be transmitted to Congress.

(d) House Document No. 1054, Sixty-second Congress, third session: A detailed examination made in 1910 of the South Fork to Guignard's Landing, estimated as 260 miles from the sea. This examination brought out little or no prospect of developing steamer traffic, and the district officer concluded that the prospective rafting was not of sufficient importance to justify improvement. The conclusions of the district officer, the division engineer, and the Board of Engineers, concurred in by the Chief of Engineers, are embodied in the following extract from the report of the Board:

> The district officer reports the locality as unworthy of improvement at this time and recommends that no further action be taken until such time as improvement of Edisto River shall have been authorized and accomplished and then only if further preliminary examination shows better prospects of development of steamboat traffic. Believing that commensurate benefits would not result from the improvement of the south fork of the Edisto River at this time, the board concurs with the division engineer in the opinion and recommendations of the district officer.

THE PRESENT EXAMINATION.

5. In view of the fact that improvement work on this river was terminated some 20 years since on the grounds that conditions no longer justified the expense and that within the last 12 years, notwithstanding an increase in wealth, population, productivity, and commercial activity within the State, the U. S. Engineer Department has three times reported adversely as to further improvement of the South Fork, the reasons for making the present examination may be found in House Document No. 606, Sixty-third Congress, second session. This document contains reports on preliminary examination, survey, and supplemental estimate of cost of improving the waterway from Orangeburg to Charleston, including the Edisto River, and recommends for the purpose an initial appropriation of $35,000, with an appropriation of $5,000 per annum for continuing operations thereafter. The river and harbor bill, as originaaly reported by the Senate and House committees in the second session, Sixty-third Congress, carried the amount named, and, although the bill was not passed in the usual form it called attention to the project, and interests on the South Fork renewed their demand for consideration of this tributary in connection with work undertaken elsewhere on the system.

6. In order to secure statistics as to present and prospective commerce on this waterway, and to elicit opinions as to the desirability of improvement, I addressed a circular letter to the Business Men's Leagues of all towns near the river, as well as to certain individuals thought to have an interest in the matter. I personally visited Bamberg and conferred with a committee of business men of that city. I also visited the village of Denmark, viewed some of the agricultural and timber lands along the river, and inspected the river itself at several points.

7. An inspection of the entire river was made by Mr. W. O. Whitescarver, United States Assistant Engineer. He left Guignards Landing on April 21, 1915, and proceeded downstream in a small "paddle boat" or canoe to the junction of the forks, where he arrived April 27, 6 days later, having traveled a distance of approximately 98 miles. He examined the river thoroughly, taking numerous soundings and recording in great detail his observations as to width, snags, trees, and obstructions, and the condition of the river generally. I accompanied him one day from New Bridge, near Bamberg, to Hobbs Turnhole, a distance of 15 miles, said to be representative of the lower portion of the river.

8. South Fork is a so-called "black-water" stream; that is to say, it is relatively free from sediment, but the water is strongly colored by reason of vegetable matter in the swamps through which it runs. The banks are generally low, swampy, and overgrown with brush and trees, among which the cypress, gum, water oak, swamp ash, and sycamore are very noticeable, while on firmer ground some distance back pine timber is to be found. Cleared or arable land bordering on the river is rarely seen. With few exceptions bridge approaches are either built up on causeways or under freshet conditions are overflowed. At several bridges the river has one high bank above the ordinary flood stage. The large area of swamp land bordering on the river affords storage for surplus water and

operates to regulate the flow. The river is therefore not subject to rapid fluctuations in level and a very fair depth is maintained even during a long continued dry spell. Floods are infrequent and seldom severe.

9. Taken as a whole the river is exceedingly crooked, the distance from Guignards Landing to the fork by river being nearly 98 miles, as against an air line distance of 30 miles. It is likewise very narrow and turns are frequently very abrupt. In its present condition the river is so obstructed by logs, snags, overhanging trees and brush as to make it difficult for even a small paddle boat to get through. While this applies with particular force to that portion of the river above the new bridge at Bamberg the lower reaches are by no means clear. At some points sand shoals have formed, but these are not numerous, comparatively speaking. A most noticeable feature is the frequent occurrence of "sucks." This is the lumbermen's term for laterals or cut-offs usually formed directly across the neck of the bends through which, by reason of increased slope the water rushes with an increased velocity and draws or "sucks" the rafts out of the original and more devious channel. These "sucks" naturally divert from the original channel a large part of the discharge and, in time, frequently replace the main channel, the old bends then remaining as lagoons or "lakes," more or less obstructed at either end.

10. The present examination was made on a low water stage averaging at least 1 foot below that of the 1910 examination. Lumbermen and others stated that the river was unusually low, but it was not possible to determine the stage with reference to the lowest known stage. No records have been kept and statements as to low water were too divergent to be accepted.

11. For some years the Weather Bureau has maintained a gauge at Edisto on the main river just below the forks, the zero of which is reported to be 127 feet above mean sea level. Although the position of this gauge is such as to give an average index of conditions on the two tributaries above rather than of either alone, their sources are so near each other and conditions are so similar that the gauge may be generally accepted as reflecting the status on either of the two forks alone.

12. According to the records the minimum stage on this gauge is —0.2 and the maximum is +6.6. The mean stage for a continuous period of 15 days of the lowest water is +0.16 occurring in June, 1914. The stage is +3.0 or better for 66 per cent of the time. During the six days of this examination the gauge varied from 2.1 to 1.9. This represents a very moderate stage of the river. In fact it is below the lowest monthly mean for the year 1912 and not much above the lowest monthly means for subsequent years.

13. The inspection notes are tabulated below. Distances were primarily determined by timing, the rate of travel per hour being estimated. The width is likewise estimated. Soundings were taken with a 10-foot pole along the apparent line of greatest depth. In practically every stretch depths exceeding 10 feet were found, but in computing the average all such soundings were included as 10 feet, and the average depth given in the table is somewhat below the true average:

Time.	Distance.	Place.	Minimum width.	Minimum depth.	Length of section.	Logs.	Snags.	Trees.	Brush.	Notes.
	Miles.		*Feet.*	*Feet.*	*Miles.*				*Feet.*	
Apr. 21, 10.38 a. m. to 1.40 p. m.	0 to 9.5	Guignards Landing–Aiken County line.	60	8.2						River stage 1.8 as referred to mean depths for 15 consecutive days' lowest water. 8 sucks, 3 sandbars; brush and trees reduce clear width to 10 feet in several places on this portion.
		Average width, 40; average depth, 6.9.	20	3.0	9.5	116	209	637	2,800	
		New bridge or Frank White bridge or Upper Springfield bridge–Camp No. 1.	55	9.5						No draw. Clearance, 3.35 feet.
Apr. 22, 8.26 to 10.51 a. m.	9.5 to 18	Average width, 38; average depth, 6.6.	20	3.0	8.5	35	55	208	15,470	Very crooked. Sharp turns. River reduced to 5 feet in places by overhanging brush and trees. Difficult to get paddle boat through. 7 sucks, lakes, and cut-offs. 6 bad sand bars on this section of 8½ miles.
		Southern Railway bridge	40	9.0						No draw. Clearance, 2.25 feet.
1.14 to 1.46 p. m	18 to 19.5	Average width, 36; average depth, 6.3.	20	3.5	1.5	15	24	39	1,870	Very narrow and crooked. Reduced to 3 feet clear at one point. 4 cut-offs and lakes. Much brush.
		Lower Springfield bridge	60	6.8						No draw. Clearance, 2.9 feet.
1.49 to 2.40 p. m	19.5 to 21	Average width, 38; average depth, 7. 2.	30	5.1	1.5	13	12	27	510	Old house-boat wrecked in river. Several sharp bends. 2 lakes.
		Fair Island boat landing	50	7.1						
2.41 to 3.56 p. m	21 to 26	Average width, 40; average depth, 6.2.	30	4.9	5.0	55	49	131	1,685	4 lakes and sucks. Strong stream enters at mile 24. 3 sharp turns.
		Ships Bluff; Camp No. 2	40	6.6						
Apr. 23, 7.40 to 9.37 a. m.	26 to 31	Average width, 43; average depth, 6.3.	25	3.8	5.0	65	76	198	2,220	Many sharp bends and bad obstructions; very difficult river; 6 sucks and lakes.
		Twin Isles	15	6.6						River divides into 3 channels; middle one 15 feet wide. Brush covers all channels.
9.38 a. m. to 2.33 p. m.	31 to 42.5	Average width, 46; average depth, 6.5.	25	2.5	11.5	100	203	240	2,105	River very tortuous. A number of sucks and cut-offs, some of which are quite wide and will develop rapidly. A number of trees across the river. Several tributaries enter in this portion.
		Hallman's bridge	75	8.3						No draw. Clearance, 5.3 feet. Open span, 33 feet.
2.51 to 3.43 p. m	42.5 to 45.5	Average width, 56; average depth, 6.5.	40	4.5	3	5	24	41	435	3 sucks. Several sharp turns. River banks generally covered with brush, reducing available width of river. A little high ground on this section.
		Williams Landing; Camp No. 3.								
Apr. 24, 8.40 to 8.46 a. m.	45.5 to 46	Average width, 68; average depth, 5.9.	50	4.8	.5		1	2		
		Seaboard Railway bridge	60	5.6						No draw. Clearance, 6.1 feet. Open span, 114 feet

Time.	Distance.	Place.	Minimum width.	Minimum depth.	Length of section.	Logs.	Snags.	Trees.	Brush.	Notes.
	Miles.		*Feet.*	*Feet.*	*Miles.*				*Feet.*	
9 to 11.53 a. m.	46 to 54	Average width, 60; average depth, 5.9.								Several log rafts in river. Some wide sucks and lakes. A few landings noticed. Shad racks and nets seen on banks. River used by small paddle boats.
		Binneckers Bridge	80	7.3						Clearance, 6.1 feet. No draw. Clear span, 31 feet.
1.30 to 2.44 p. m.	54 to 58	Average width, 64; average depth, 5.6.	40	4	4	24	39	44	990	6 sucks and lakes. Numerous sharp turns. Stream divides at one place, leaving 2 narrow channels. Several bad snags and one sand bar.
		Atlantic Coast Line Ry. bridge.								No draw. Clearance, 9.7 feet. Clear span, 115 feet.
2.55 to 3.32 p. m.	58 to 60.5	Average width, 60; average depth, 5.6.	40	4	2.5	9	38	17	260	5 sucks and lakes. Sharp turns and bad snags. Cut-offs reduce available width greatly. Can be developed.
		Camp No. 4	60	4.6						
Apr. 25, 7.58 to 9.42 a. m.	60.5 to 66	Average width, 60; average depth, 6.	40	4.1	5.5	23	114	97	2,505	12 cut-offs, sucks, and lakes. Some cut-offs very pronounced and old river choked up. River generally crooked. Several sand shoals.
		New Bamberg Bridge; Camp No. 5.								Clearance, 4.8 feet. No draw. Clear span, 50 feet.
Apr. 26, 7.32 to 10.22 a. m.	66 to 77.2	Average width, 70; average depth, 6.	30	3.8	11.2	38	212	251	1,853	12 sucks, cut-offs, and lakes. Several sharp turns. Many logs in bottom.
		Cannon Bridge	90	4.8						No draw. Clearance, 5 feet.
10.39 to 11.16 a. m.	77.2 to 81	Average width, 70; average depth, 6.1.	35	4.2	3.8	5	28	61	1,190	7 sucks and cut-offs. River better. Few sand bars.
		Hobbs Turnhole	110	20						Deep, sharp bend.
3.05 to 5.58 p. m.	81 to 89	Average width, 79; average depth, 5.9.	40	3.5	8	13	83	64	180	3 sucks and 1 good cut-off. River open. Curves easy.
		Camp No. 6								
Apr. 27, 8.06 to 11... a. m.	89 to 97.75	Average width, 74; average depth, 5.5.	50	3.8	8.75	25	156	244	1,670	Many old lakes and sucks divert the flow and reduce the average depth; curves generally easy.
		Junction with North Fork. (Two forks unite and form Edisto River.)								
Total					97.75	793	1,459	2,520	38,481	

14. A review of the foregoing notes will indicate that the lower third of this stream—that is, from the New Bamberg Bridge, mile 66, to the mouth—is somewhat more susceptible of improvement than the upper reaches. While depths are no better, the width is better and obstructions less frequent and serious. The river is still very crooked, and only the smaller type of boats could navigate the sharp turns.

15. The territory which in the event of improvement would be commercially tributary to the South Fork is almost wholly agricultural, excepting only the timber lands. Outside the swamp tracts along the river bottoms the land is quite generally under cultivation, and in productivity compares well with the very best in the State. The principal crop is cotton, and the four counties touching this stream produce nearly 20 per cent of the cotton crop of the State. However, under the impulse toward diversified farming the acreage devoted to corn, oats, hay, fruit, and vegetables is gradually increasing, and for the year 1915 the acreage put in wheat shows an astonishing increase.

16. Barring an occasional small clearing the low-lying swamp lands are still in timber, of which the more valuable has long since been cut out. Changed conditions have created a market for the lower grades of pine and also for the hardwoods. One company states that it has on its own holdings 125,000,000 feet of merchantable timber and estimates that other companies hold about an equal amount. While this is being cut more or less steadily and eventually the lands will either be cleared and cultivated, or else more scientifically forested than at present, many years must elapse before this area can become a material factor in the general situation. The accompanying map indicates the extent of this swamp land devoted to timber.

17. There are no important industrial communities in this section. With the exception of a few small cotton mills, no manufacturing is done. The small towns, of which there are many, serve as trading centers for the surrounding agricultural territory.

18. The following statistics showing agricultural products of the four counties touching the South Fork were furnished by the Hon. E. J. Watson, commissioner of agriculture, commerce, and industries of South Carolina. The figures as to cotton are accurate, while figures as to other crops are careful estimates made by his department and checked against the actual census figures of 1910.

Cotton (bales).

	Aiken.	Bamberg.	Barnwell.	Orangeburg.
1910	41,408	23,861	47,978	71,092
1913	48,066	27,641	58,880	80,606
1914	51,207	29,466	65,639	89,457

Other crops, 1914 (estimated).

Corn	bushels	710,000	412,000	800,000	1,300,000
Oats	do	147,600	104,000	182,000	525,000
Wheat	do	4,000	.....	425	3,000
Potatoes	do	160,000	53,000	86,000	210,000
Hay and forage	tons	9,300	90	1,200	11,000

19. The Business Men's League of Bamberg submits the following estimate as to volume of business transacted in Bamberg for the year 1914:

Commodities.	Tons of 2,000 pounds.	Value.	Freight charges.
EXPORT.			
Cotton	3,400	$810,000	$17,000
Cotton seed	1,250	32,250	2,500
Cottonseed products	4,350	152,250	8,750
Live stock	825	330,000	49,500
Lumber and shingles	110	2,200	460
Logs	2,300	18,400	3,650
Fruits, vegetables, and garden truck	1,100	22,000	.....
IMPORT.			
Fertilizer	2,750	55,000	3,200
Hardware and agricultural implements	360	28,800	11,200
Groceries, canned goods, and provisions	3,150	204,750	21,175
Hay, grain, and feed	1,800	36,000	3,500
Bricks, lime, and cement	600	5,600	750
Ice	350	1,750	475
Dry goods, clothing, etc	850	46,500	8,750
Whisky, wine, and beer	230	68,000	5,375
Oils and paints	50	15,000	650
Miscellaneous general merchandise	200	20,000	4,650

The other towns failed to prepare the data desired.

20. These tables represent the aggregate in each case, and not merely that part which might be transported on the river were it navigable. It is conceivable that under certain conditions an appreciable part of this might be diverted to a water route. What these conditions must be will be discussed later in connection with transportation facilities that now exist. However, it should be noted here that Orangeburg County is tributary to the North Fork rather than to the South Fork, and a very small part of its water-borne freights would go by the South Fork in any event.

21. Local interests desire the South Fork improved in conjunction with the Edisto main river to permit the establishment of a freight boat service as well as to facilitate the rafting out of the remaining marketable timber. They particularly desire to secure the advantage of water rates on cotton, cottonseed products, farm produce, fertilizers, and the lower class freights generally.

22. Existing transportation facilities are indicated on the general map herewith. The territory is served by three railroad systems, the Atlantic Coast Line, the Seaboard Air Line, and the Southern Railway, affording very direct connections with the seaports of Charleston, Beaufort, and Savannah, and the railroad centers of Augusta, Ga., and Columbia, S. C. These railroads thoroughly intersect the country and there can be few plantations in the valley of the South Fork more than five miles distant from a freight station. There is now no town or freight landing on the South Fork, and the river can be reached only by crossing the swamp tracts in which many, if not all, of the roads are subject to occasional overflow. There are very few farms on or really near the river, and water transport service would be at a tremendous disadvantage by reason of time and distance, if for no other cause.

23. The three railroads intersect at Denmark, which, although it lies five miles from the South Fork, may be selected as a representative shipping point within the territory under consideration.

From Denmark, as a center, distances are as follows:

Denmark—	By rail.	By water.
	Statute miles.	*Statute miles.*
To Charleston	82	203
To Savannah	90	234
To Augusta	46	.....
To Columbia	51	.....

The distances on the Inland Waterway are scaled from the Coast and Geodetic Survey charts. The river distances are from records in this office.

24. Comparative freight rates, quoted by the Southern Railway Co., are as follows:

	From Denmark, S. C., to Charleston, S. C.			From Denmark, S. C., to Savannah, Ga.		
	L. C. L.	*C. L.*	*Minimum pounds.*	*L. C. L.*	*C. L.*	*Minimum pounds.*
Cotton, uncompressed	25	$0.25	.....	25	25	.....
Cotton seed	21.5	$1.15	20,000	22	$1.15	20,000
Cottonseed meal	.....	1.70	20,000	.....	1.70	30,000
Cottonseed hulls	.....	1.15	20,000	.....	1.50	24,000
Live stock	21.5	$26.00	20,000	47	$26.00	.....
Lumber, sawed	9	5.5	24,000	9.4	6	24,000
Logs	10.8	6.6	24,000	11.2	7.2	24,000
Potatoes and cabbage	21.5	.....	.....	22	.....	24,000
Fertilizer	$2.04	$1.70	20,000	.....	.....	.....
Brick	11.5	[1]$1.60	.....	12	16	24,000
Hay, in bales	21.5	11.5	20,000	22	12	20,000
Grain and feed	13	13	.....	13	13	.....
Farm cultivators	33	21.5	20,000	33	22	20,000
Lime	11.5	$12.00	.....	12	$12.50	.....
Groceries and hardware	46	46	.....	47	47	.....
Dry goods	53	53	.....	53	53	.....
Cement	11.5	$18.00	.....	12	$18.00	.....

[1] Per thousand.

Rates expressed in cents per hundred pounds and dollars and cents per ton of 2,000 pounds, except brick, carload from Denmark to Charleston, applies per 1,000 brick, minimum 6,000 brick; and all carload rates on live stock, lime, and cement apply per car of 20,000 pounds, excess in proportion. L. C. L.=less than carload lots; C. L.=carload lots.

25. If, now, the distances by rail and by water be compared, and the costs of loading and transfer at terminal points be considered, it is evident that to leave any margin of profit at all the actual carrying costs per ton-mile by water would have to be exceedingly low, and the management of the boat line would have to attain a degree of organization and efficiency rarely found in a small enterprise such as this would necessarily be.

26. Aside from the private capital necessary to inaugurate a steamer service, it is clear that the investment required from the National Government would not be small. As an independent proposition the improvement of the South Fork with a view to boat service thereon is impossible. Such an improvement could only be effective subsequent to improvement of the Edisto River proper. With the exception of a little rafting of logs there is now no commerce on the South Fork, nor can any be developed. Access must be had to the sea and thence to Charleston, Beaufort, or Savannah, as the nearest commercial centers. The improvement of the South Fork, if con-

sidered at all, must be contingent upon the improvement of the Edisto River. Such improvement will represent a considerable amount of capital.

27. Taking into consideration all the conditions and circumstances, including the amount of public and private capital involved, the situation is such as to render it exceedingly improbable that a self-sustaining all-water service can possibly be developed. On the one hand must be created an active transportation system complete with all its auxiliaries. The river channel must be cleared of snags, deepened and widened at some points, and straightened at others; boats of a type adapted to the river must be provided; wharves and freight-houses must be erected; roads must be constructed; a business organization must be perfected; and all these, once provided, must be maintained. To this must be added certain difficulties especially inherent to navigation on small waterways, such as failure to maintain time schedules, high rates of insurance, transshipment charges at terminals and the like. On the other hand stands a railway transportation service, organized, equipped, and in full operation, affording a choice of markets and of routes reasonably certain and direct, possessed of ability to maintain schedules or to make good all losses in the event of failure. In the face of these conditions it is most unlikely that a boat service would receive more than a modicum of patronage. Local sentiment might be sufficient to support a boat service for a time, but business can not be successfully maintained on sentiment alone.

28. In so far as the lumber industry is concerned, it does not seem sufficient in volume to justify improvement and, in any event, methods now pursued are such that even if the river were once opened it would soon be more or less blocked by brush, logs gone adrift and abandoned. Snagging and clearing operations would have to be ceaselessly maintained.

29. There are no questions of water-power development involved. Clearing and straightening the river might have some effect on flood run-off and on drainage, but it would be very slight. There are no terminals or terminal facilities to be considered.

CONCLUSION.

30. Considering the actual condition of the waterway, the geographical location of existing trading centers in its vicinity, and their relationship to seaports and railroad centers, existing transportation facilities, and the power of regulating railroad rates vested in Federal and State railway commissions, together with the volume of existing and prospective commerce, I report that, in my opinion, the South Fork of the Edisto River, as an independent project, is not worthy of improvement. The improvement of this tributary for purposes of navigation can not be considered in any event, except as contingent upon improvement of the Edisto River proper. I would recommend that action looking toward improvement of the South Fork be deferred until such time as improvement of the main river shall have been effected and a self-sustaining boat service shall have been established.

Respectfully submitted.

G. A. YOUNGBERG,
Major, Corps of Engineers.

[First indorsement.]

OFFICE OF DIVISION ENGINEER, SOUTHEAST DIVISION,
June 8, 1915.

To the CHIEF OF ENGINEERS:

1. For the reasons stated in the within report and summed up in the first sentence of paragraph 30, I concur in the conclusion that the South Fork of the Edisto River is not worthy of improvement by the General Government at the present time.

2. To the summation already referred to may be added the large cost of any suitable improvement of this river.

W. C. LANGFITT,
Colonel, Corps of Engineers.

[Third indorsement.]

BOARD OF ENGINEERS FOR RIVERS AND HARBORS,
September 28, 1915.

To the CHIEF OF ENGINEERS, UNITED STATES ARMY:

1. As a result of the district officer's notice of unfavorable report, a hearing was given at the office of the board on September 28, 1915, at which Hon. James F. Byrnes, M. C., appeared in behalf of the desired improvement. A copy of the record of the hearing is forwarded herewith.[1]

2. In view of the statement that the interests concerned would be satisfied with the snagging of the river as far up as Bamberg, in connection with the work contemplated in the report published in House Document No. 606, Sixty-third Congress, second session, on the improvement of the Edisto River, it is recommended that the district officer be called upon for an estimate of cost covering this work and his views thereon. It has been suggested that the estimate for the operation of snag boats on the Edisto may possibly be sufficient to do provide also for snagging on the South Fork to Bamberg, by extending the time for clearing the streams of these obstructions.

For the board.

W. M. BLACK,
Colonel, Corps of Engineers,
Senior Member of the Board.

PLAN AND ESTIMATE OF COST OF IMPROVEMENT OF SOUTH FORK OF EDISTO RIVER UP TO SPRINGFIELD, S. C.

WAR DEPARTMENT,
UNITED STATES ENGINEER OFFICE,
Charleston, S. C., October 20, 1915.

From: The District Engineer Officer.
To: The Chief of Engineers, United States Army.
(Through the Division Engineer).
Subject: Improvement of South Fork of Edisto River, S. C.

1. In compliance with departmental letter of October 11, 1915, I submit an estimate of cost covering snagging of the South Fork of the Edisto River as far up as Bamberg, together with my views thereon.

[1] Not printed.

2. By existing highway, New Bridge is the point on the South Fork nearest to Bamberg. According to the reconnaissance mentioned in the preliminary examination, this is nearly 32 miles by water above the junction of the forks. In this stretch of river visible obstructions to navigation in April, 1915, consisted of 82 logs of considerable length and diameter, 479 snags—such as stumps, short logs, and smaller sticks of timber—620 overhanging trees, and 4,900 linear feet of brush requiring removal from the banks. In addition to the above, it is known that there is a large number of logs and snags wholly submerged and more or less imbedded in the bottom, which, under the action of the current, will doubtless rise and require removal when the weight of other débris now resting upon them has been removed. The obstructions enumerated above are therefore to be taken as a minimum index of difficulties present.

It should also be noted that Cannons Bridge will have to be provided with a draw before a snagboat can operate on the river up to Bamberg.

3. While the depth is generally adequate, this stream is so narrow and crooked that only the smaller and lighter snag boats could navigate it. These are necessarily of limited capacity, and the average cost per obstruction removed is rather high. As determined from the annual report on floating plant for the year 1914, the average gross cost per obstruction for craft of this class is $2.41, which would give a first cost for removing the 1,181 obstructions listed of approximately $2,850. This is exclusive of cutting brush and removing obstructions now wholly submerged, the cost of which may be estimated as not less than $850, giving a total of $3,700 as the cost of operating a snag boat for the first clearing of the river, assuming that a suitable snag boat were available.

4. In his report on the survey of Edisto River, S. C., with a view to improving a waterway from Orangeburg to Charleston, published in House Document No. 606, Sixty-third Congress, second session, the district engineer officer estimated a first cost of $35,000, of which $15,000 was to cover operations of a large snag boat below the junction of the Forks and $20,000 for constructing a small snag boat and operating same for two years on the North Fork. He reports 3,500 visible obstructions in the North Fork which, at an assumed cost of $2.41 per obstruction, would require $8,435 for their removal. On the same basis as before, allowing about 30 per cent for removal of obstructions now wholly submerged and for cutting brush, the North Fork would require about $11,000, leaving $9,000 for the construction of the snag boat and for incidentals.

5. It is to be further noted that on this basis of calculation no account has been taken of new snags and obstructions which have developed subsequent to the dates of respective examinations, or which may develop while work is in progress. The number of obstructions in the North Fork was determined by a count made during the survey, and average 120 per mile, whereas the number for the South Fork was determined during a rapid reconnoissance and average only 37 per mile. Under the circumstances it is very probable that the number reported in the South Fork is too low.

6. I am forced to conclude therefore that the estimate of $35,000 for the operation of snag boats on the Edisto and North Fork does not

afford a margin sufficient to provide also for snagging the South Fork to Bamberg, even though the time for clearing these streams were to be extended. To include this work the estimate should be increased to $40,000, with $5,000 annually for maintenance.

7. In arriving at an opinion as to the improvement of the South Fork in connection with the proposed improvement of main river and North Fork, the following points are considered:

(*a*) Orangeburg is a city of 6,000 inhabitants (5,906, census of 1910), located on the bank of the North Fork. The terminal of any boat line established would be within three-fourths of a mile of the center of the city and within a few hundred yards of existing railway terminals. The city has several manufacturing plants and the surrounding country on all sides is exceedingly productive. The city handles a large amount of cotton, cotton products, farm produce, and agricultural implements, fertilizers, and general freight. It is well supplied with railroads, the three great systems of the South entering the city; that is, the Southern Railway, the Atlantic Coast Line, and the Seaboard Air Line.

(*b*) Bamberg, on the other hand, has a population of 2,000 inhabitants (1,937, census of 1910), and the center of the city is 3 miles from the river by the shortest existing highway. The city does very little or no manufacturing, although it is a busy trading center for the adjoining agricultural territory, and handles cotton, farm produce, fertilizers, and general freight. It has two railroads, the Southern Railway, direct to Charleston, and a connection with the Atlantic Coast Line, via Walterboro and Green Pond to Charleston or Savannah.

(*c*) The distances by water from Orangeburg to Charleston and from Bamberg to Charleston are nearly equal, slightly over 200 miles, and the distances by rail do not differ materially, being about 80 miles, with the difference in favor of Bamberg.

(*d*) The North Fork to Orangeburg is small and tortuous, and in this respect is inferior to the South Fork up to Bamberg New Bridge.

(*e*) On account of advantages in size and location on the river bank, Orangeburg would seem to offer a better prospect than Bamberg of developing a water-borne freight service to and from Charleston, while the possibility of developing business at landings between the termini is about the same in the two cases.

8. Unfortunately, experience on the smaller rivers of South Carolina is not favorable to this project, either as applied to Orangeburg or to Bamberg. With the exception of the Congaree River, navigation within this State in recent years has not been able to seriously compete with the railway service. As to the Congaree, the saving feature is the existence, at the head of navigation, of Columbia, a large and active manufacturing city, offering a considerable volume of lower-class freights. In the Peedee section, where the towns are smaller and the activity is almost entirely agricultural in character, water-borne commerce for some time past has shown a steady decline, and the recent advent of a railroad penetrating the territory formerly served by river has all but terminated the river business. On the Wateree River, in spite of snagging operations carried on every year, the volume of commerce is negligible or nonexistent.

9. In the cases under consideration the railroads possess all the advantages of organization, financial responsibility, and regular and speedy service. Moreover, as applied to Charleston or Savannah, they have an advantage over the water routes of 120 miles in distance, with the rates not excessive for the service rendered.

10. Under the circumstances I am constrained to believe it doubtful that a self-sustaining freight service can be developed on these rivers which, in addition to usual operating expenses, shall afford a reasonable return on the equipment investment. If, in addition, interest charges on the cost of the improvement be taken into account

it is very improbable that the volume of business will be sufficient to justify the expenditure of private and public funds. Furthermore, based on analogous situations within this State, I do not believe that the mere existence of a water route and a potential water-borne commerce will have any effect on existing railway rates. These will certainly not be lowered by the railways on their own initiative until compelled to such action by the loss of business to rival routes, nor is it probable that any railway rate commission would predicate an order to that effect on competition which is constructive and not actual.

11. As previously stated, commerce on the South Fork can not be developed independently of a similar development on the main river, but the possibilities of commercial development in the two cases are interrelated. If therefore it be held that an appropriation of $35,000 is warranted for the improvement of the Edisto River and the North Fork to Orangeburg, an expenditure of $5,000 more for the improvement of the South Fork would appear to be justified. I would therefore recommend that the amount be increased to $40,000 and that the South Fork to Bamberg New Bridge be included in the scope of the project in order that if, by some fortuitous chain of circumstances, commerce should develop up to the forks, Bamberg may then be in position to take advantage thereof without the delay incident to securing a separate appropriation for the South Fork.

G. A. YOUNGBERG,
Major, Corps of Engineers.

[First indorsement.]

OFFICE DIVISION ENGINEER, SOUTHEAST DIVISION,
October 22, 1915.

To the CHIEF OF ENGINEERS:

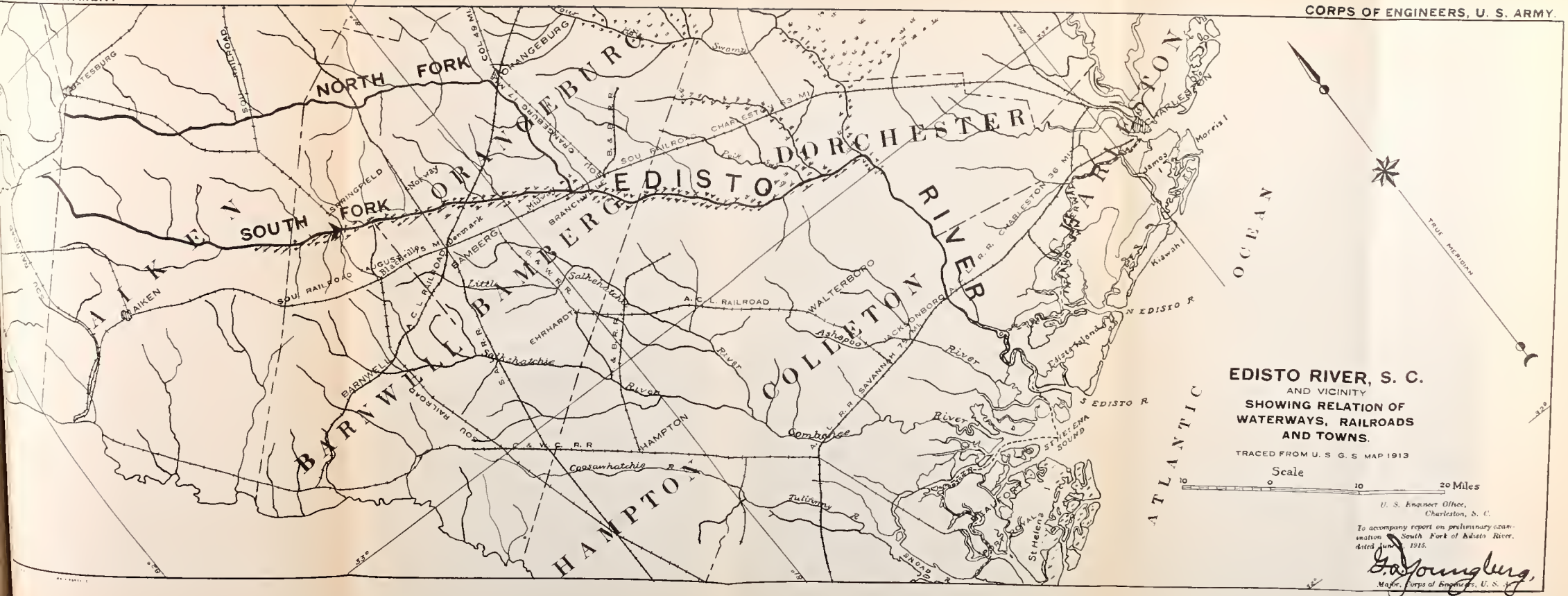
Forwarded. This report confirms, in my opinion, the conclusion reached in the original report on preliminary examination, that the South Fork of the Edisto River is not worthy of improvement by the General Government at the present time. I further am of the opinion that the prospects of commerce developing on this fork are so remote that I do not believe it should be included with the North Fork and the Edisto River proper, even if these latter are decided worthy of improvement.

W. C. LANGFITT,
Colonel, Corps of Engineers.

[For report of the Board of Engineers for Rivers and Harbors on plan and estimate of cost of improvement, see page 2.]

WAR DEPARTMENT

CORPS OF ENGINEERS, U. S. ARMY.



EDISTO RIVER, S. C.

AND VICINITY

SHOWING RELATION OF WATERWAYS, RAILROADS AND TOWNS.

TRACED FROM U. S. G. S. MAP 1913

Scale

10 0 10 20 Miles

U. S. Engineer Office,
Charleston, S. C.

To accompany report on preliminary examination of South Fork of Edisto River, dated June 1, 1915.

G. A. Youngberg,
Major, Corps of Engineers, U. S. A.

House Doc. No. 559; 64th Cong., 1st Sess.